Purple Card Production Readiness Review

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Summary:
The "purple card" is a printed circuit card designed to interface between silicon readout Sequencers and readout hybrids. The card is designed to translate and regenerate control and data signals to and from the SVX. It also is the path for SVX chip power and detector bias voltage. Approximately 15 revision 1 and 2 boards are available. These perform adequately and can be used for individual test stands. The 75 production (Revision 3) boards are needed to populate detector burn-in stands. They are expected to be available ~16 weeks after the order is placed. This will pace the assembly of the burn-in stands. The committee feels that these boards are ready for production and any concerns listed below should not be allowed to materially delay the placement of the order.

Comments:

- The card does not have a provision for SVX current monitoring. The committee feels that this capability is desirable for the burn-in and long term test stands. There appears to be an opportunity to retrofit a daughter card which will provide this functionality with minimal changes to the Revision 3 design. The committee feels that we should plan for some sort of SVX current monitoring, either as such a daughter card or external to the purple card.

- The cost and schedule for board production are reasonable. Long lead time parts have been purchased and are in hand.

- There is a concern with the overall quality and stability of remote sense regulation for the SVX chip. The phase margin and transient response for remote sense operation should be measured. This is a more major concern for the adapter card circuit, which will need to drive longer cables. It would be advantageous if the purple card could be used with the appropriate adapters for twisted pair cables as a test bed for adapter card designs.

- There should be a final engineering review of the circuit and layout by the FNAL/D0 engineering group.

- The KSU group intends to buy parts for 80 cards, with the full assembly of 75. The group has proposed to buy a few additional bare boards. This is inexpensive and seems to be a reasonable plan.

- It would be prudent to have an engineering evaluation of a coupon of the controlled impedance sections of the board before full board production proceeds.

- The KSU group will structure the order to provide quick turnaround delivery of ~2 boards to qualify the vendor before releasing the boards for full production.

- It would be useful to have an earlier review (prePRR?) before production orders are imminent. This would allow groups to address non-critical issues without delaying the schedule.

- The lack of a signed MOU will put the KSU group into an awkward position, spending money with no guarantee of reimbursement by Fermilab. We hope that the obstacles to FNAL Run2b equipment spending can be resolved as soon as possible.